

PLANAR ARRAYS OF MICROPARTICLE-BOUND POLYNUCLEOTIDES

Abstract of the Invention

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An apparatus and system are provided for simultaneously analyzing a plurality of analytes anchored to microparticles. Microparticles each having a uniform population of a single kind of analyte attached are disposed as a substantially immobilized planar array inside of a flow chamber where steps of an analytical process are carried out by delivering a sequence of processing reagents to the microparticles by a fluidic system under microprocessor control. In response to such process steps, an optical signal is generated at the surface of each microparticle which is characteristic of the interaction between the analyte carried by the microparticle and the delivered processing reagent. The plurality of analytes are simultaneously analyzed by collecting and recording images of the optical signals generated by all the microparticles in the planar array. A key feature of the invention is the correlation of the sequence of optical signals generated by each microparticle in the planar array during the analytical process.